UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM:

To: Julie Breeden-Alemi, DVM

From: Autumn Metzger, M.S.

Secondary Review: Jennifer Saunders, Ph.D.

Date: 12/6/2016

Subject: PRODUCT PERFORMANCE DATA EVALUATION RECORD (DER)

THIS DER DOES NOT CONTAIN CONFIDENTIAL BUSINESS INFORMATION

Note: MRIDs found to be **unacceptable** to support label claims should be removed from the data matrix.

DP barcode: 435773
Decision no.: 516913
Submission no: 991927
Action code: 360
Product Name: Tempo 2.5 SC Ultra Concentrate
EPA Reg. No or File Symbol: 72155-58
Formulation Type: Soluble Concentrate
Ingredients statement from the label with PC codes included:
a.i. = beta-cyfluthrin 2.5% PC: 118831
Application rate(s) of product and each active ingredient (lbs. or gallons/1000 square feet or per acre as appropriate; and g/m^2 or mg/cm^2 or mg/kg body weight as appropriate):
Use Patterns:
1 Qt treats up to 21,000 ft2
Most pests rate = 2 Tbs. (1 fl oz) for up to 1,000 ft 2 = 0.0016 lb ai/1,000 ft2
Scorpion rate = 1 Tbs. for 1,000 ft2 = .0008 lbs ai/1,000 ft 2
Tick's lowest rate in ornamental section rate = 1/2 tsp = 0.00027 lbs ai/1,000 ft 2

I. Action Requested: This product had never submitted a data matrix nor been previously reviewed for efficacy, therefore the registrant was notified that a full data matrix was required and the Agency was responsible for reviewing all supporting data/citations for claims against all public health pests on the label.

II. Background: This is a soluble concentrate beta-cyfluthin product, which attaches to your hose to provide a spray for outdoor use. The label includes the following pests: termites, ants/carpenter ants, spiders, ticks, fleas, flies (biting, cluster, gnat flies), wasps, hornets, bees, yellow jackets, scorpions, "wood infesting beetles," mosquitoes, centipedes and chiggers. Some of the types of marketing claims include: "residual for 14 days," "residual for 30 days," "works in hours," "works quickly," and "works before they do damage."

MRID 40132701. Product Performance of Cyfluthrin and Laser Ant & Roach Killer

(1) Not GLP

This MRID is a summary of cyfluthrin's chemical composition, acute toxicity and product performance. For the product performance, it reviews simple studies for aerosol, granular baits, brush on, oil-miscible spray, cold/thermal fogging and sprays made from wettable powders.

Study 1:
(2) Methods:
This was a study of cyfluthrin on 29 various pests with various formulations and different doses, and the formulation types did not appear to be specified per pest. Many of the pests were not public health pests. The different formulations were diluted in acetone and put on petri dishes, then an un-specified number of pests were placed in the dishes and assessed every 15 min for 2 hours, then every 30 min for 4 hours then at 6, 24 and 72 hours. Knockdown was measured and if 100% knockdown wasn't achieved it was estimated when it would be achieved.

(3) Results: Given the deficiencies listed below and that mortality was not recorded, the results will not be summarized here.

(4) Conclusion: Unacceptable. The number of pests were not provided, there were no controls, mortality was not measured and knockdown was "estimated." It is also assumed there was forced exposure for sometimes up to 72 hours, which would be unrealistic in a real life setting.

Note that the other studies listed in the MRID were either not clearly defined or applicable because the formulation wasn't comparable to the subject product, and therefore they were not reviewed.

MRID 42443701. Efficacy for Subterranean Termite Control

(1) Not GLP, it states GLP did not exist for this type of study at this time

(2) **Methods:** The following products were tested: Karate (Lambda-cyhalothrin), Baythroid (cyfluthrin) and Dursban (Chlorpyrifos). Four concentrations of the cyfluthrin formula were tested: 0.125, 0.25, 0.50, and 1% at each location.

The only formulation relevant for this study is the Baythroid, which will be the only one for which results will be summarized.

Each formulation was applied to soil using concrete slab and ground-board methods (described below) at 4 geographic locations: AZ, FL, MS, SC. Concentrations were installed at 4 concentrations at 1 pint/ft2 of soil surface via the concrete slab and ground method.

Concrete slab method: leaves and debris were removed to expose soil over a 24 sq inch area. A 21" wood frame on its side was placed over the areas and a trench was dug 2" deep. Insecticide was evenly applied in the middle of the area then a polyethylene sheet was placed on top. Concrete was poured over areas with 1" depth to form a simulated house slab with a 4" tube sticking out the middle. When the concrete dried, the sheet was pulled through the tube and the tube was covered.

Ground-board method: in addition, 2 concentrations were installed with this method, which doesn't have concrete, rather a board allowing entire area to be exposed to weathering.

Each treatment was replicated 10 times. Examination took place after 2, 3 and 4 years to see whether termites had penetrated or not. Controls were also conducted in same way without treatment.

Rate for the study = 0.0026 lbs ai per sq ft (using the 0.25% concentration)
Rate for the label = 0.0078 lbs ai per sq ft

Therefore, the label rate is more than the 0.25% concentration rate used in the study (which was the lowest efficacious dose up to 5 years – see MRID 42942301 for complete review results) so the rates are acceptable to cite.

(3) **Results:**

All rates provided 100% control in all states for all 4 years, with the exception of one of the Mississippi sites which was at 90% for the 0.125% concentration (it was 100% for all other concentrations).

Table 1.—Percent control of subterranean termites after 3 years in test.

Insecticide Percent	Method[2]	Percent control[1] Arizona[3] (4/21/90)	Florida (2/9/90)	Mississippi (5/24/90)	South Carolina (9/21/90)
Baythroid[R]					
0.125	CS	100	100	90	100
0.25	CS	100	100	100	100
0.50	CS	100	100	100	100
1.0	CS	100	100	100	100
0.50	GB	100	100	100	100
1.0	GB	100	100	100	100
Controls					
-	CS	50	10	30	0
-	GB	30	10	10	0

[1]Based on 10 replicates per treatment.

[2]CS = concrete slab; GB = ground-board.

[3]Evaluation date given under each state.

(4) **Conclusion: Supplemental.** This MRID must be used with MRID 42942301 for subterranean termite claims. See below for those conclusions and acceptable claims.

MRID 42840701. Reduction of Nymphal *Ixodes dammini* in Residential Surburban Landscapes by Area Application of Insecticides

(1) GLP unknown as this is a literature review

(2) **Methods:**

One hundred and one suburban NY properties were treated with carbaryl emulsifiable concentrate (EC) at 0.6 or 1.1 kg AI/ha, Granular (GR) carbaryl (7.15%) at 4.5 kg AI/ha, chlorpyrifos wettable powder (WP) at 0.6 or 1.1 kg AI/ha, granular chlorpyrifos (2.3%) at 1.1 kg AI/ha, and cyfluthrin EC at 0.1 kg AI/ha. The only formulation relevant for this study is the cyfluthrin, which will be the only one for which results will be reported.

Two NY neighborhoods surrounded by forest were solicited for participants. A sub sample of 71 properties were

sampled the week before to confirm presences of *I. dammini* and to compare the 2 neighborhoods. Sampling was conducted by dragging a 1 m2 corduroy cloth through vegetation and checking every 10 m for attachment of ticks. Treatments consisted of a single application of 1 of the formulations to lawn and ornamental areas and 2 meters into surrounding woods on the property between May 30th and June 13 in 1990. There were 101 treated houses and 25 control houses. Results were evaluated by comparing density of nymphs using the drag method with untreated controls. All ticks collected were taken to the lab for identification. Properties were sampled 3x after treatment. Percent control was compared by analysis of variance (ANOVA) or arcsine transformed values.

The rate of the formulation with the cyfluthrin treatment was 0.1 kg active ingredient per HA which converts to 0.002 lbs ai per 1,000 sq ft or 0.09 lbs ai per acre. Therefore, the minimum rate on the label that can be used for ticks is 1 tablespoon diluted in 1 gallon of water applied at 3 gallons of water per 1,000 sq since that equals the exact rate of the study. The rate on the label that says to dilute ½ teaspoon in 1 gallon of water is too low.

(3) **Results:**

The cyfluthrin formulation showed an average of 92.2% reduction in *I. dammini* nymphs.

Table 2. Overall percentage reduction in *I. dammini* nymphal density following insecticide treatment in Mt. Kisco, NY, 1990

Treatment	Avg. density (SEM) (nymphs/1000 m^2)	% Reduction (SEM)[a]
Control	5.0 (1.3)	—
Carbaryl EC 1.1 kg AI/ha	2.1 (0.5)	67.9 (8.6)
Carbaryl EC 0.6 kg AI/ha	1.2 (0.3)	78.1 (6.1)
Carbaryl GR 4.5 kg AI/ha	1.7 (0.4)	77.5 (6.9)
Chlorpyrifos WP 1.1 kg AI/ha	0.2 (0.1)	97.4 (1.7)
Chlorpyrifos WP 0.6 kg AI/ha	0.5 (0.4)	86.7 (6.8)
Chlorpyrifos GR 1.1 kg AI/ha	0.3 (0.2)	94.2 (3.1)
Cyfluthrin EC 0.1 kg AI/ha	0.2 (0.2)	92.2 (4.1)

[a] From treatment to 41 d, calculated as per Mount (1981).

Table 3. Average nymphal density of *I. dammini* and percentage reduction provided by seven insecticide formulations in Mt. Kisco, NY, in 1990

Treatment	Sample period 1 (15 d after treatment)			Sample period 2 (31 d after treatment)			Sample period 3 (41 d after treatment)		
	No. of properties	Density, n/1000 m² (SEM)	Average % reduction (SEM)	No. of properties	Density, n/1000 m² (SEM)	Average % reduction (SEM)	No. of properties	Density, n/1000 m² (SEM)	Average % reduction (SEM)
Control	25 (80)	8.1 (1.6)	—	24 (46)	6.1 (1.)	—	24 (35)	2.4 (1.2)	—
Carbaryl EC 1.1 kg	15 (40)	3.3 (1.1)	76.3 (8.1)	15 (13)	0.5 (0.5)	86.9 (7.3)	14 (29)	1.9 (1.2)	64.3 (12.1)
Carbaryl EC 0.6 kg	14 (29)	1.6 (0.8)	69.0 (9.5)	14 (21)	1.1 (0.9)	85.6 (8.0)	14 (14)	0.5 (0.6)	85.7 (9.5)
Carbaryl GR 4.5 kg	13 (31)	1.5 (0.4)	89.1 (4.3)	10 (40)	1.9 (0.6)	70.5 (8.8)	10 (30)	1.8 (0.6)	70.7 (14.0)
Chlorpyrifos WP 1.1 kg	16 (13)	0.5 (0.3)	95.4 (2.3)	15 (0)	0.0 (0.0)	100.0 (0.0)	15 (7)	0.2 (0.1)	95.6 (4.3)
Chlorpyrifos WP 0.6 kg	14 (14)	0.2 (0.1)	96.6 (3.5)	11 (27)	0.7 (0.5)	83.7 (7.2)	10 (30)	0.7 (0.3)	84.9 (10.0)
Chlorpyrifos GR 1.1 kg	14 (7)	0.2 (0.3)	96.4 (3.5)	14 (14)	0.6 (0.4)	90.2 (6.2)	14 (0)	0.0 (0.0)	100.0 (0.0)
Cyfluthrin EC 0.1 kg	13 (8)	0.2 (0.4)	95.4 (4.4)	12 (25)	1.1 (0.4)	87.5 (8.2)	11 (9)	0.2 (0.2)	93.1 (6.4)

Numbers in parentheses indicate the percentage of the properties where ticks were collected during that sample period.

(4) **Conclusion: Supplemental**. For a new product or a new amendment, we would typically require the submission of a lab study on adult deer ticks confirming efficacy. However, since the data from the field study show good efficacy of the product against *Ixodes scapularis* and additional data on the lone star tick and either the brown dog tick or the American dog tick should be provided to obtain any tick claim, this MRID can be used to support the deer tick.

MRID 42942301. Temp – Efficacy for Subterranean Termite Control

(1) Not GLP (did not exist at the time of the study)

(2) Methods: This is an addendum to MRID 42443701, providing the 5th year results. See above for the full methods of the study.

Rate for the study = 0 .0026 lbs per sq ft (using the 0.25% concentration)
Rate for the label = 0.0078 lbs per sq ft

Therefore, the label rate is more than the 0.25% concentration rate used in the study (which was the lowest efficacious dose up to 5 years) so the rates are ok to cite.

(3) Results: At year 5, the 0.125 % cyfluthrin remained 100% effective in FL, but declined to 90% in AZ, SC and 80% in MS. At 0.25, 0.5 and 1.0% under concrete slabs and at 0.5% underground boards it remained 100% effective at all 4 test sites**.**

Table 1.--Percent control of subterranean termites after 5 years in test.

Insecticide Percent	Method[2]	Percent control[1] Arizona[3] (4/11/92)	Florida (2/14/92)	Mississippi (5/25/92)	South Carolina (9/18/92)
Cyfluthrin					
0.125	CS	90	100	80	90
0.25	CS	100	100	100	100
0.5	CS	100	100	100	100
1.0	CS	100	100	100	100
0.5	GB	100	100	100	100
1.0	GB	100	100	90	100
Monitoring[4]		Percent attack			
	GB	90	70	90	100
	CS	50	70	90	80
Control[5]	Year				
	GB - 1	10	80	100	80
	GB - 2	60	90	--	100
	GB - 3	90	100	--	--
	GB - 4	100	--	--	--

(4) Conclusion: Acceptable. This study demonstrates that the product is efficacious against subterranean termites only for up to 5 years at the 0.25% rate or a dosing of 0.0026 lbs per sq ft. The study (when used in conjunction with MRID 42443701) support the claims and uses on the label, which include:

- Building foundations: prevents subterranean termite infestations for outdoor homeowner post-construction use only (if termites are found within the house or structure, contact a licensed pest control operator for treatment).
- Deck & Fence Posts
- Firewood
- Above ground termites (Drywood) should be deleted from the label as there were no data submitted to support them.

MRID 43808901. Performance Data: Efficacy of Tempo 0.1% Dust on Fire Ants

(1) Not GLP

(2) Methods: Two separate tests were conducted with Tempo 0.1% dust (the study did not indicate what active ingredients are found in this product and an EPA registration number was not provided). Each test was conducted in Mississippi on a fair ground, each under different weather patterns. Fire ant mounds <12 inches were treated with 1 level tablespoon and >12 inches received 2 tablespoons. Temperatures were between 80-90 degrees F and for 1 group, rainfall had occurred 35 hours after application with 5" over a 2-day period. For the second treatment, no rain occurred within 24 hours, then 0.8" occurred 60 hours after application. Evaluations were made 24 hours post treatment (w/o rain) and 104 post treatment (after rainfall). Controls were considered to be the first time point taken (pre- treatment).

The study did not indicate how results were measured or determined.

(3) Results:

RESULTS:
Test 1: (073-95-018)
Application Date: 6/9/95
Rainfall Conditions: Rainfall occurred 36 hours after application totalling 5.0 inches ove
2 day period.

Mound Number	Mound Size(in)	Dosage/mound (tablespoons)	Percent Control 6/12	6/14	6/22	6/26
1	11	1	100	100	100	100
2	16	2	100	100	100	100
3	12	1	100	100	100	100
4	18	2	100	100	100	100
5	8	1	100	100	100	100
6	15	2	100	100	100	100
7	18	2	100	100	100	100
8	15	2	100	100	100	100
9	17	2	100	100	100	100
10	12	1	100	100	100	100
11	19	2	100	100	100	100
12	13	2	100	100	100	100
13	22	2	100	100	100	100
14	18	2	100	100	100	100
15	14	2	50	50	20	100*
16	17	2	40	30	10	100*
17	10	1	100	100	100	100
18	16	2	100	100	100	100
19	20	2	100	100	100	100
20	17	-	0	0	0	0
21	18	-	0	0	0	0
22	10	-	0	0	0	0
23	14	-	0	0	0	0
24	16	-	0	0	0	0

*** Retreated on 6/22, and resulted in 100% control. These mounds were located in a gravel driveway area where a culvert crossed the drive and the mounds were apparently larger or extended farther than the initial treatment covered.**

7

Test 2: (073-95-019)

Application Date: 6/22/95

Rainfall Conditions: No rainfall occurred within 24 hours after application, then rainfall totalling 0.8 inches occurred 50 hours after application. Evaluations were made at 24 hours post treatment(without rainfall), and 104 hours post treatment(after rainfall).

Mound Number	Mound Size(in)	Dosage/mound (tablespoons)	Percent Control 6/23*	6/26	7/3	7/12
1	16	2	20	100	100	100
2	20	2	30	100	100	100
3	9	1	20	100	100	100
4	18	2	20	100	100	100
5	15	2	30	100	100	100
6	21	2	20	50	100	100
7	16	2	20	100	100	100
8	12	1	30	100	100	100
9	14	2	20	100	100	100
10	18	2	20	100	100	100
11	8	1	30	100	100	100
12	18	2	20	100	100	100
13	15	2	20	100	100	100
14	20	2	20	80	100	100
15	16	2	20	100	100	100
16	19	2	20	100	100	100
17	10	1	20	100	100	100
18	16	2	20	100	100	100
19	11	1	30	100	100	100
20	18	2	20	100	100	100
21	18	2	20	100	100	100
22	14	2	20	100	100	100
23	16	-	0	0	0	0
24	12	-	0	0	0	0
25	20	-	0	0	0	0
26	14	-	0	0	0	0

*Estimated degree of control- values taken 24 HAT, where no rainfall occurred and numerous dead fire ants were observed at the base of the mounds. When the mounds were "probed", there were very active fire ants just below the soil surface.

Control values for 6/26 are after rainfall of 0.8 inches occurred.

(4) **Conclusion:** Unacceptable. The formulation is not applicable as it is a dust nor it did indicate which chemical(s) were in the product. In addition, the study never indicated how results were measured.

MRID 44208601. The Evaluation of Rossel Uclaf Products for the Control of Sowbugs and Deer Ticks in Turf

(1 Not GLP

(2) **Methods:** Test products included 5 experimental DTM granulars, DTM 0.05% Dust, DTM SC5, and Saga 40WP. To test perimeter turf grass on deer ticks (*Ixodes scapulars*) and sow bugs *(Cylisticus convexu.).* Since sow bugs are not public health pests they will not be reviewed. Of the different formulations tested on ticks, the only ones with formulations that could be determined were Dursban 1G, which contains chlorpyriphos, and Tempo 20WP, which is a 20% cyfluthrin wettable powder. See table 1 below in the results section with all of the listed formulations and the rates used. For dusts it only indicated that the "appropriate amounts were applied" so it cannot be determined the exact amount of ai that was applied to the area.

Two trials were conducted with "falcon" tall fescue sod placed in plastic tubs that were 46cm x 28cm by 13 cm high. Fifteen deer tick nymphs were placed in each tub and treated with either a backpack sprayer for liquid or shaker for dusts/granular and were watered in. A control was sprayed with water. Each treatment was replicated three times. Containers were sealed and checked after 72 hours. Findings were recorded as live or dead and

moribund pests were counted as dead.

(3) **Results:**

Tempo reported 100% control.

Table 2. Number of living ticks 72 hour posttreat. Fifteen ticks placed in arena prior to treatment. Falcon tall fescue, 1994.

TREATMENT	RATE	REP I	REP II	REP III	AVG	% CONTROL
0.5%permethrin RUC R94-182	14.4g/m^2	0	0	0	0.00A	100
0.1%DTM RUC R94-174	14.4g/m^2	0	0	0	0.00A	100
0.1% DTM RUC94-183	14.4g/m^2	0	0	0	0.00A	100
0.1% DTM RUC94-184	14.4g/m^2	1	1	0	0.67B	96
0.1% DTM RUC94-185	14.4g/m^2	0	0	0	0.00A	100
DTM 5SC	0.06%	4	3	3	3.33C	78
DTM dust .05%	8oz per 1000ft^2	0	0	0	0.00A	100
TLM SAGA 40WP	0.06%	1	1	0	0.67B	96
Tempo 20WP	0.05%	0	0	0	0.00A	100
Dursban 1G	12.2g/m^2	2	1	1	1.33B	91
Water Control	-	8	12	9	9.67D	36

Granular treatments watered with an equivalent 1/4 inch irrigation following application. Spray formulations and water control applied at the rate of 1 gal/1000 sq. ft. Spray formulation rates given as percent concentrations, granular and dust formulations rates given as formulated material per unit area.

(4) **Conclusion:** Unacceptable. It is unclear what exact rates were used. In addition, only 3 replicates were used, moribund were counted as dead, and the pests had 72 hours of forced exposure, which is unrealistic in a real life setting.

MRID 45046801. Performance Data: Efficacy of Tempo 1.0% Dust (Cyfluthrin) Insecticide on Fire Ant Mounds

(1) GLP, unknown

(2) **Methods:**

Test products with rates are included below in the results section. None of the test formulations are applicable as they are either dusts or could not be confirmed what type of formulation they were.

Five separate field trials were performed in AR, FL, GA and SC against imported fire ants *Solenopsis invicta*.

Cyfluthrin dust formulations were applied at 0.5, 2 or 2 teaspoons per mound, then either watered or not watered and evaluated at days 1, 3, 7, 14 and 30. Presence of broods were determined in various ways such as disturbing the mounds and counting the ants that appeared or by excavated the mounds that had no ant activity and searching for eggs, larva or pupa on the last day. Some studies indicated that if no brood were found in treated mounds, they considered that it indicated the queen was killed by treatment; others weren't as clear.

(3) **Results:**

Since none of the formulations were applicable, results won't be reported here.

(4) **Conclusion:** Unacceptable. None of the formulations were applicable to this product.

MRID 45053101. Performance Data: General Efficacy of Temp 20 WP (Cyfluthrin) Insecticide

(1 Not GLP

(2) **Methods:** Tempo 20 WP, a 20% cyfluthrin wettable powder, was tested against numerous pests on different surfaces such as ceramic tile, plywood, plants, mulch, etc. The public health pests in the study were: Ants (argentine, carpenter, California harvester & pavement), Roaches (American, German), Flies (cluster, house), Scorpion (lesser brown), spiders (brown recluse, daddy long legs, false harvester, house) & wasps.

This is not an acceptable data submission. This is 365-pages of information containing very brief abstracts followed by long pages of indistinguishable tables of analysis that cannot be deciphered. The abstracts were often missing key pieces of information required for a review such as methods, rates, replicates, controls and sometimes even the species of pests. These data are presented without organization or format and are lacking proper tables. It is the registrant's responsibility to organize and present their data in a report that is clear, concise and applicable to the pests/rates/formulation of the product for the Agency to review. Therefore, this MRID was not reviewed.

(3) **Results:** N/A

(4) **Conclusion:** Unacceptable

MRID 45060801. Performance Data: 6 Month Residual Study with Cyfluthrin 0.1%

(1 Not GLP

(2) **Methods:** Test products were a ready to use 0.1% cyfluthrin spray, bifenthrin RTU (0.05%), tralomethrin RTU (0.003%) and tralomethrin RTU (0.002%). This MRID consisted of 10 separate lab studies to evaluate numerous pests on different surfaces for up to 6 months for residual clams. Tiles were 6x6 inch and were either glass, ceramic tile or particle board and evaluations were conducted with exposure for either 15 seconds, one minute or continuous exposure. Only studies run on public health pests will be further summarized below.

Each tile was sprayed until surface was completely covered and tiles were held in lab for 6 months. After 6 months the tiles were infested as follows:

Adult black or brown widow spider: only 1 spider total (no reps) was put on a glass tile and held with a plastic cup to provide continuous exposure. Live count was taken at 15 min intervals for 1 hour then at 2, 3, 4, 6 and 24 hours after exposure.

Carpenter ants (2 different studies): 10 adult black carpenter ants (with no replicates) were put on tile and held down with a mason jar and counts were taken at the same intervals as the spiders.

German cockroaches (4 different studies)– 10 adult cockroaches were given only 15 second exposures at each monthly interval. There were 4 replicates of each trial. It was indicated that percent mortality was recorded, but it did not clarify if moribund were considered dead or alive.

The studies did not indicate if controls were conducted in any of the studies.

(3) **Results:**
Carpenter ants had 100% knockdown within 45 min. and the second carpenter ant study indicated that ants had recovered at 24 hours. It states that 50% of spiders were killed, however if only 1 spider was used per test it is unclear how this is possible unless multiple tiles were used per day, which the report did not indicate.

This table below does not indicate for which time point the results are being reported, or if it is a summary of all of the results for the 6 month time frame.

Six Month Residual Study with Cyfluthrin 0.1% (Bayer Advanced Home Pest Control)

Trial#	Pest	Surface/ Exposure	% Control							
			Cyfluthrin 0.1		Bifenthrin 0.05		Tralomethrin 0.003		Tralomethrin 0.002	
			4 hrs	24 hrs	4 hrs	24 hrs	4 hrs	24 hrs	4 hrs	24 hrs
BRP-99-00509	Male/Female G. Cockroaches	Glass/Continuous	100	100	90	100	100	100	100	100
BRP-99-00511	Male G. Cockroaches	Ceramic Tile/Continuous	100	100	97.5	100	100	100	100	100
BRP-99-00513	Male G. Cockroaches	Particle Board/Continuous	45	100	32.5	100	25	100	20	82.5
BRP-99-00541	Male G. Cockroaches	Ceramic Tile/15 seconds	100	100	5	25	30	87.5	20	38.5
BRP-99-534	Black Carpenter Ants	Ceramic Tile/1 minute	100	60	95.7	100	95.7	90	78.6	70
BRP-99-536	Black Carpenter Ants	Glass/Continuous	100	100	100	100	100	100	100	100
BRP-99-537	Mable Orchard Spiders	Ceramic Tile/1 minute	5	53.6	55	64.3	5	0	25	46.4
BRP-99-539	Black Widow Spiders	Glass/Continuous	100	100	70	100	70	100	100	100
BRP-99-540	House Crickets	Ceramic Tile/1 minute	100	100	85.7	100	71.4	100	77.1	100
BRP-99-543	House Crickets	Ceramic Tile/Continuous	100	100	90.9	100	100	100	100	100

BRP-99-00509 and BRP-99-536 did not have 4 hr readings but 2 hr readings.
Prepared by: V. Bruce Steward
Revised: 2/11/2000

(4) **Conclusion:** Unacceptable. Only live/knockdown counts, not mortality, were recorded and no controls were conducted. In addition, too few replicates were conducted.

Only ceramic tile or glass tiles were used per pest in this study. To gain full general pest claims see the guidance on substrates testing below:

- For a general indoor residual claim, both a porous (e.g., unpainted, unfinished plywood) and a nonporous (e.g., linoleum or glazed ceramic tile) should be used.
    - If mattresses or fabric are included as a labeled site, efficacy data using cotton sheeting, mattress ticking and/or carpeting should also be provided.
- For outdoor residual claims on buildings and outdoor residual claims for perimeter treatments, a nonporous surface (e.g., vinyl siding or tile) and a porous surface (e.g., unpainted concrete) should be used.
- For outdoor residual claims on pavement, a porous surface (e.g., unpainted concrete) should be used.
- For outdoor residual claims on lawns, grass/turf plugs should be used.

MRID 45377001. Performance Data: Mosquitoes & Ticks for products containing cyfluthrin and beta-cyfluthrin

(1) GLP - Unknown (not the submitter)

(2) **Methods:** This MRID is a compilation of 5 literature studies on different formulations against mosquitoes and ticks. The 5 different studies were as follows:

3 mosquito studies performed with a suspension concentrate formulation
2 tick studies performed with an emulsifiable concentrate formulation

Study 1:

Mrusek, K. 1998. Residual efficacy of Responsar 2.5% SC on different surfaces against mosquitoes *Aedes aegypti, Culex quinquefasciatus* and *Anopheles stephensi*. Internal report, Bayer AG , No.: 112, 6 pp.

(2) Methods: A 2.5% SC formulation of beta-cyfluthrin (the same as this product) was applied at the rates of 5 mg, 7.5 mg or 12.5 mg/m2 to PVC, plywood, painted plywood, unglazed tiles & glazed tiles (all 15 x15 cm) surfaces. Each were sprayed with the equivalent of the rate of 100 ml/m2. If you convert the label rates for mosquito applications from what the label says "1 fl oz to treat 1000 ft2" to mg/m2 the rate is 23.62 mg/m2, therefore the test rates are well below the label rate and are acceptable to cite. Twenty mosquitoes (no replicates) (either *Aedes aegypti, Culex quinquefasciatus* or *Anopheles stephensi*) were placed on treated surfaces 1 day after treatment, then weekly for 4 weeks, then on weeks 6, 8, 12, 16, 20 and 24. Knockdown was evaluated at 15, 30 & 60 min then at 2, 3, 4, 5, 6 & 8 hours. Mortality was determined at 24 hours and all insects were removed, which indicates a 24 hour forced exposure time period. A control was used as well.

(3) **Results for study 1:** It seems some surfaces either didn't have efficacy or weren't tested past 2 weeks and others showed efficacy up to 24 weeks, but many time points took 8-24 hours to achieve this. The graphs indicate 100% mortality at every time point at every surface for treated and 0% mortality for untreated.

table 1

Residual Efficacy of Responsar 2.5 % SC Applied on PVC (P), plywood (H), painted plywood (LH), unglazed tiles (UK) and glazed tiles (LK) against both sexes of mosquitoes *Aëdes aegypti* (susceptible).

trial: v180298c+d

temperature: 24-25°C
rel. humidity: 70-78%

product	mg ai/m²	sur-face	100 % knock down with mortality after minutes and hours during an exposure-time of 24 hours and % mortality after 24 hours, respectively: 1 day	1 we.	2 we.	3 we.	4 we.	6 we.	8 we.	12 we.	16 we.	20 we.	24 we.
Responsar 2.5 % SC Lab.Code: 514/58-0	5.0	P	2h	24h 90	24h 90	24h 80	24h 30						
		H	2h	2h	2h	60'	2h	60'	2h	60'	2h	60'	2h
		LH	3h	6h	5h	3h	4h	8h	24h	4h	6h	4h	8h
		UK	60'	60'	2h	2h	4h	2h	3h	4h	5h	5h	24h
		LK	60'	60'	60'	60'	60'	60'	30'	60'	60'	30'	60'
	7.5	P	2h	24h	24h	24h	24h 90	24h 80	24h 70				
		H	2h	2h	2h	60'	2h	60'	2h	60'	60'	60'	2h
		LH	2h	3h	4h	3h	4h	3h	5h	3h	6h	4h	6h
		UK	60'	60'	2h	2h	2h	2h	3h	4h	4h	5h	24h
		LK	60'	60'	60'	60'	60'	60'	60'	60'	60'	15'	30'
	12.5	P	2h	3h	6h	24h	24h	24h	24h 90	24h 80	24h 70		
		H	2h	2h	60'	60'	2h	60'	2h	60'	60'	60'	60'
		LH	2h	3h	4h	3h	4h	3h	5h	3h	3h	3h	6h
		UK	60'	60'	60'	2h	2h	2h	3h	4h	5h	5h	24h
		LK	60'	60'	60'	30'	60'	60'	30'	30'	30'	15'	30'
control		P	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0		
		H	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		LH	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		UK	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		LK	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0

13

table 2

Residual Efficacy of Responsar 2.5 % SC Applied on PVC (P), plywood (H), painted plywood (LH), unglazed tiles (UK) and glazed tiles (LK) against both sexes of mosquitoes *Culex quinquefasciatus* (DDT-resistant).

trial: v180298c+d

temperature: 24-25°C
rel. humidity: 70-78%

product	mg ai/m²	sur-face	100 % knock down with mortality after minutes and hours during an exposure-time of 24 hours and % mortality after 24 hours, respectively: 1 day	1 we.	2 we.	3 we.	4 we.	6 we.	8 we.	12 we.	16 we.	20 we.	24 we.
Responsar 2.5 % SC Lab.Code: 514/58-0	5.0	P	24h 70	24h 0	24h 0								
		H	8h	5h	8h	24h	8h	6h	24h	24h	24h 90	24h	24h 90
		LH	8h	24h 80	24h 30								
		UK	6h	4h	24h 90	24h 50							
		LK	5h	4h	5h	4h	4h	3h	6h	5h	5h	6h	8h
	7.5	P	24h 80	24h 30	24h 0								
		H	6h	5h	8h	24h	24h	6h	24h	24h	24h	24h	24h
		LH	5h	24h 90	24h	24h 90	24h 30						
		UK	5h	4h	6h	24h	24h 70						
		LK	5h	4h	4h	4h	4h	3h	6h	4h	5h	4h	5h
	12.5	P	24h	24h 80	24h 0								
		H	6h	5h	8h	6h	8h	6h	24h	8h	24h	24h	8h
		LH	5h	6h	24h	24h 90	24h 90	24h	24h 60				
		UK	6h	4h	6h	6h	24h	24h 80	24h 40				
		LK	4h	3h	3h	4h	4h	3h	6h	4h	4h	4h	3h
control		P	24h 0	24h 0	24h 0								
		H	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		LH	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0				
		UK	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0				
		LK	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0

14

table 3

Residual Efficacy of Responsar 2.5 % SC Applied on PVC (P), plywood (H), painted plywood (LH), unglazed tiles (UK) and glazed tiles (LK) against both sexes of mosquitoes *Anopheles stephensi (susceptible).*

trial: v180298c+d

temperature: 24-25°C
rel. humidity: 70-78%

product	mg ai/m²	sur-face	100 % knock down with mortality after minutes and hours during an exposure-time of 24 hours and % mortality after 24 hours, respectively: 1 day	1 we.	2 we.	3 we.	4 we.	6 we.	8 we.	12 we.	16 we.	20 we.	24 we.
Responsar 2.5 % SC Lab.Code: 514/58-0	5.0	P	24h	24h 50	24h 40								
		H	2h	2h	2h	2h	2h	60'	60'	60'	2h	2h	60'
		LH	3h	3h	4h	4h	24h 90	5h	6h	8h	6h	24h 80	24h 90
		UK	60'	60'	2h	4h	4h	6h	24h	5h	24h 60		
		LK	30'	60'	60'	2h	60'	60'	30'	60'	30'	30'	30'
	7.5	P	8h	24h 90	24h 70								
		H	2h	2h	2h	3h	2h	60'	60'	60'	2h	2h	60'
		LH	4h	3h	4h	4h	6h	3h	4h	8h	6h	24h 90	8h
		UK	60'	60'	60'	3h	3h	2h	3h	4h	8h	24h	24h 90
		LK	30'	60'	30'	2h	60'	30'	30'	60'	30'	30'	30'
	12.5	P	3h	24h	24h 90	24h 80	24h 60						
		H	2h	2h	2h	2h	60'	60'	60'	60'	2h	2h	60'
		LH	2h	3h	4h	3h	3h	2h	3h	4h	4h	6h	6h
		UK	60'	60'	60'	2h	2h	2h	2h	4h	6h	5h	6h
		LK	60'	60'	60'	2h	30'	30'	30'	30'	30'	30'	30'
control		P	24h 0	24h 0	24h 0	24h 0	24h 0						
		H	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		LH	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		UK	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		LK	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0

(4) **Conclusion:** Unacceptable. Mortality was not measured until 24 hours post exposure and a 24 hour forced exposure is too long as it is not realistic to real-world scenarios. In addition, there were no replicates of these tests.

Study 2:

Study on the Residual Action of Responsar Compared with Solfac WP 10, Responsar WP 5 and Cislin Suspension against Mosquitoes

(2**) Methods:** B-cyfluthrin SC formulation was compared to wettable powder formulation and a deltamethrin formula. Each were sprayed on clay, whitewashed clay and plywood surfaces at a rate of 100 cm3/m2. Twenty *C. quinquefasciatus* and *A. stephensi* mosquitoes (no replicates) were placed under aluminum rings on each surface on day 1 and 8 then on weeks 2, 3, 4, 6, 8, 12, 16, 20, 24, 28 and 32 and were exposed for 24 hours. Evaluation was based on knockdown after 15, 30 and 60 min and after 2, 3, 4, 5, 6 and 8 hours then percent mortality was determined after 24 hours and the insects were removed. Controls were used as well.

(3) **Results**: It seems some surfaces either didn't have efficacy or weren't tested past 2 weeks and others showed efficacy up to 24 weeks.

table 2

Residual efficacy of different formulations applicated on floverpot (T), whitevashed floverpot (TK) and plywood (H) against Anopheles stephensi.

trial : v030895

temperature (°C) : 24 - 25
rel. humidity (%) : 70 - 81

formulations	amount	surface	100% knock down after minutes resp. hours during an exposition-time of 24 hours												
			1 day	8 day	2 we.	3 we.	4 we.	6 we.	8 we.	12 we.	16 we.	20 we.	24 we.	28 we.	32 we.
Responsar SC 2,5	10 mg ai/m²	T	4 h	2 h	2 h	3 h	3 h	3 h	3 h	3 h	3 h	4 h	5 h	24h	24h 90
		TK	6 h	8 h	6 h	5 h	24h 90	24h 90	24h	24h 90	24h 90	24h 80	24h 80	24h 60	
AL2O3-formulation 191193-001-S		H	3 h	5 h	3 h	4 h	3 h	3 h	2 h	2 h	60'	2 h	2 h	3 h	3 h
Responsar SC 2,5	15 mg ai/m²	T	2 h	2 h	2 h	2 h	2 h	2 h	3 h	2 h	3 h	3 h	2 h	4 h	5 h
		TK	5 h	3 h	6 h	4 h	3 h	24h	24h	24h	5 h	24h	24h 90	24h	24h 80
AL2O3-formulation 191193-001-S		H	3 h	2 h	2 h	2 h	2 h	2 h	2 h	3 h	60'	2 h	2 h	3 h	2 h
Responsar SC 2,5	20 mg ai/m²	T	2 h	60'	2 h	2 h	2 h	3 h	2 h	2 h	3 h	3 h	3 h	4 h	5 h
		TK	3 h	2 h	4 h	3 h	24h 90	3 h	24h	24h 90	3 h	6 h	5 h	24h 90	8 h
AL2O3-formulation 191193-001-S		H	3 h	3 h	2 h	2 h	2 h	2 h	2 h	3 h	60'	2 h	60'	2 h	2 h
Solfac WP 10	30 mg ai/m²	T	2 h	2 h	4 h	5 h	6 h	24h 30							
		TK	8 h	24h	8 h	24h 50	24h 0								
Pt. 233313004		H	60'	60'	2 h	60'	60'	60'	60'	60'	30'	60'	30'	2 h	60'
Responsar WP 5	20 mg ai/m²	T	15'	60'	2 h	2 h	3 h	6 h	24h 80	24h 30					
		TK	2 h	4 h	24h 90	24h 0	24h 40								
FI 4178/19		H	2 h	2 h	60'	60'	60'	60'	2 h	60'	30'	60'	30'	60'	60'
Cislin Suspension	7,5 mg ai/m²	T	60'	30'	60'	60'	60'	2 h	2 h	60'	60'	2 h	2 h	3 h	2 h
		TK	60'	60'	2 h	60'	2 h	2 h	5 h	8 h	3 h	4 h	8 h	24h	24h 90
Wellcome 25 g/l Deltam.		H	3 h	2 h	2 h	2 h	60'	2 h	3 h	3 h	60'	2 h	60'	2 h	2 h
control		T	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		TK	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0
		H	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0

16

table 1

Residual effficacy of different formulations applicated on floverpot (T), whitewashed floverpot (TK) and plywood (H) against Culex quinquefasciatus.

trial : v030895

temperature (°C) : 24- 25
rel. humidity (%) : 70- 81

formulations	amount	surface	100% knock down after minutes resp. hours during an exposition-time of 24 hours											
			1 day	8 day	2 ve.	3 ve.	4 ve.	6 ve.	8 ve.	12 ve.	16 ve.	20 ve.	24 ve.	28 ve.	32 ve.
Responsar SC 2,5	10 mg ai/m²	T	4 h	5 h	24h	6 h	24h 90	24h 70							
		TK	6 h	24h	24h	24h	24h 60								
AL203-formulation 191193-001-S		H	24h	24h	24h 90	24h	24h	24h 80	24h 90	24h 90	24h	24h 80	24h 90	8 h	24h 80
Responsar SC 2,5	15 mg ai/m²	T	3 h	3 h	5 h	5 h	8 h	24h	24h 90	24h 50					
		TK	5 h	6 h	24h	24h	24h 90	24h 40							
AL203-formulation 191193-001-S		H	24h	24h	24h	6 h	24h	24h	24h	24h 90	24h	24h	24h	8 h	24h
Responsar SC 2,5	20 mg ai/m²	T	3 h	3 h	4 h	5 h	5 h	5 h	24h	24h 30					
		TK	3 h	5 h	24h	24h 90	24h 80	24h 50							
AL203-formulation 191193-001-S		H	6 h	6 h	5 h	6 h	24h	8 h	24h	6 h	6 h	6 h	24h	8 h	24h
Solfac WP 10	30 mg ai/m²	T	4 h	24h	24h 0										
		TK	24h	24h	24h 40										
Pt. 233313004		H	4 h	4 h	5 h	4 h	8 h	6 h	5 h	6 h	24h	4 h	6 h	4 h	24h 90
Responsar WP 5	20 mg ai/m²	T	2 h	6 h	6 h	24h	24h 70								
		TK	3 h	24h	24h 70										
F1 4178/19		H	5 h	24h	24h	24h	24h	6 h	24h 90	24h	24h	24h	8 h	6 h	24h 90
Cislin Suspension	7,5 mg ai/m²	T	4 h	5 h	8 h	24h	24h	24h	24h	24h 40					
		TK	5 h	6 h	8 h	24h	24h	24h	24h 70	24h 30					
Wellcome 25 g/l Deltam.		H	24h	24h	24h	24h	24h	24h	24h	24h 90	24h 90	24h 70	24h 70		
control		T	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0					
		TK	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0					
		H	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0	24h 0

(4) **Conclusion**: Unacceptable, the mosquitoes had forced exposure for 24 hours, which is not realistic in real-world setting. In addition, there were no replicates.

Study 3:

BAYER AG DIVISION - FIELD DEVELOPMENT
GPC/INSECTICIDE - Product Trial Summary

(2) Methods & Results:

The only thing that was included for this study was an abstract and data outputs (both are copied below), which are difficult to decipher since they are full of unknown abbreviations and numbers in addition to the copy being of poor quality. Therefore, this study cannot be reviewed.

Abstract

Walls of aquariums were sprayed with hand trigger sprayer and allowed to dry prior to infestation. Mosquitos were released into aquariums and mortality was read 10, 15 and 30 minutes and 17 hours following infestation. IMIDACLOPRID + CYFLUTHRIN RTU gave the quickest mortality with 90% at 15 minutes post exposure. At 30 minutes, IMIDACLOPRID + CYFLUTHRIN CONC. and RTU and CYFLUTHRIN CONC. all gave 100% mortality. DURSBAN CONC. gave 100% control at 17 Hours.

Pest Code	I AEDSAE	I AEDSAE	I AEDSAE	I AEDSAE	I AEDSAE
Pest Stage	ADULTS	ADULTS	ADULTS	ADULTS	--
Evaluation Method	LIVING	LIVING	LIVING	LIVING	JUDGMENT
Evaluation Object	ANIM CGD	ANIM CGD	ANIM CGD	ANIM CGD	--
Sample Size / Crop Stage	10 /--	10 /--	10 /--	10 /--	--/--
Sample Object	ANIM CGD	ANIM CGD	ANIM CGD	ANIM CGD	--
Evaluation Formula	%ABBOTT	%ABBOTT	%ABBOTT	%ABBOTT	RTG 1-9
Eval. Formula Untreated	ABS/1SAM	ABS/1SAM	ABS/1SAM	ABS/1SAM	--

Compound	Conc.	Fm	Rate A.I.	Un it	No.	Ref.	Application G-Pl-Mtd	08/11/99 10 I ALA	08/11/99 15 I ALA	08/11/99 30 I ALA	08/12/99 17 H ALA	/ / EXX
1.UNTREATED								(10.0)	(10.0)	(10.0)	(10.0)	
2.CYFLUTHRIN	0.75	EW	.00293%		1	BIF(1	H)R-CN-SPY	0.0	30.0	100.0	100.0	1
3.IMIDACLOPRID	0.72	SE	.00281%		1	BIF(1	H)R-CN-SPY	0.0	90.0	100.0	100.0	1
&CYFLUTHRIN	0.72		.00281%									
4.IMIDACLOPRID	0.012	SE	0.12	%	1	BIF(1	H)R-CN-SPY	85.0	90.0	100.0	100.0	1
&CYFLUTHRIN	0.003		0.003	%								
5.CHLORPYRIFOS	4.38	SL	0.0086%		1	BIF(1	H)R-CN-SPY	0.0	0.0	0.0	100.0	2

Conclusion: Unacceptable, the format and size/quality of the copy of the study provided does not allow adequate review of the material presented.

Study 4 – Ticks

1. Solberg, V.B., K. Neidhardt, M. Sardelis, F. Hoffmann, R. Stevenson, L. Boobar and H. Harlan. 1992. Field evaluation of two formulations of cyfluthrin for control of *Ixodes dammini* and *Amblyomma americanum* (Acari: Ixodidae). J. Med. Entomol. 29(4): 634 – 638.

(1) Methods: Applications were made in the spring and fall at the rate 0.41 kg AI/ha to test plots in New Jersey. There were 7 replicates for each formulation at each of the 5 test plots and controls were included at each site. Ticks were sampled using "4 dry ice-baited tick traps" and all ticks trapped were identified and counted. Results for *Ixodes dammini* and *Ambloymma americanum* were included in the results.

(2)Results:

Table 1. Effect of spring applied Tempo 2 applications against *I. dammini* and *A. americanum.*

Treatment	Rate (kg AI/ha)	Mean number of ticks collected			
		Pre-treat	10-d	2 mo	1 year
I. dammini					
Untreated	-	1.6	13.0	36.7	4.6
Tempo 2	0.41	1.6	1.3	0.3	0
A. americanum					
Untreated	-	267.7	231.0	167.7	882.4
Tempo 2	0.41	315.0	21.7	0.7	313.4

(3) Conclusion: **Unacceptable**. The rate tested in this study is 0.41 kg AI/HA (0.008 lbs ai/1,000 sq ft) which is still twice the rate of even the highest labeled rate. Therefore, this study cannot be used to support any ticks on the label at the current label rates.

Study 5 – Ticks

2. Sconyers, M.C. 1985. Tick control with Tempo 2. Internal report, Bayer Corp., No.: 96776, 9 pp.

(1) Methods: Four field trials were conducted around old home sites in TN in 1985. Three of the sites had 3-5 inches of vegetation and one was in a crawl space below a home. Evaluations were made by dragging a 6 x 20 ft long blanket over 100 ft of the 1,000 ft within the treated area and ticks that had attached were counted. Pre-treatment counts were conducted, however there were no controls.

Tempo 2 (which is a 23.4% liquid concentrate cyfluthrin product) was applied at 1.5 and 3 grams AI/ 1,000 ft 2. The labeled rate is 0.726 grams AI/1,000 ft2, so the testing was applied at 2 to 24 times the labeled rate. The table indicates lower rates were used but the study only listed 1.5 and 3 g AI/1000 ft 2.

(2) Results: summary table with averages of all ticks recovered.

Table 1. Effect of Tempo 2 applications against *Dermacentor variabilis, Amblyomma americanum* and *Ixodes scapularis.*

Treatment	Rate (g a.i./1000ft^2)	Number of Ticks					
		Pre-treat	3 h	1-d	7-d	21-d	53-d
D. variabilis							
Untreated	-	1 (2)	1.3	1 (2.3)	1	1	12
Tempo 2	0.34	(2)	-	(0)	-	-	-
	0.68	(2)	-	(0)	-	-	-
	1.37	(2)	-	(0)	-	-	-
	1.50	2	0	0	0	1	2
	3.00	4	0	0	0	0	2
A. americanum & I. scapularis							
Untreated	-	2 (75)	-	2 (71)	-	-	-
Tempo 2	0.34	2	-	0	-	-	-
	0.68	2	-	0	-	-	-
	1.37	4	-	0	-	-	-
	3.00	(75)	-	(2)	-	-	-

Untreated and Tempo 2 treatments in ( ) are from same study.

(3) Conclusion: Unacceptable as the rates are too high as compared to the labeled rate. The summary table provided by Bayer had lower rates, however the study only indicated these rates above. In addition, only 4 plots were assessed in a field setting with numerous variables, and no controls were conducted.

MRID 45390601. Home Pest Control (Cyfluthrin 0.1%)

(1 Not GLP

(2) **Methods/Results:** The following copy and pasted info below is the only information provided by the study: It does not indicate the test formulation (if liquid or solid), provide rates used or specify if moribund insects were considered dead or alive. It also states that insects were exposed for either 15 seconds or continuously, however doesn't report the findings in a way to see the difference.

Abstract

A total of three separate laboratory studies were conducted to evaluate the residual performance of cyfluthrin 0.1% (Bayer Advanced Home Pest Control) on two different surfaces, ceramic tile and particle board, to male German cockroaches. Treated surfaces were allowed to age for nine and 12 months. Evaluations were conducted by allowing the test species to be exposed to the treated surface for 15 seconds or continuous exposure. At four and 24 hours after exposure, percent mortality was determined. Cyfluthrin 0.1% proved to be one of the most effective treatments as compared to the competitive standards, bifenthrin 0.05% and tralomethrin 0.025% (Table 1). In the majority of the trials, 100% control was obtained by cyfluthrin 0.1% at the 24 hour after exposure reading. The results obtained in these studies with cyfluthrin 0.1%, support that it provides nine months of residual control for cockroaches when applied indoors.

Table 1. Nine Month Residual Study with Cyfluthrin 0.1% (Bayer Advanced Home Pest Control) on Male German Cockroaches, 2001.

		% Control											
		Nine Months						Twelve Months					
Trial#	Surface/ Exposure	Cyfluthrin 0.1		Bifenthrin 0.05		Tralome-thrin 0.025		Cyfluthrin 0.1		Bifenthrin 0.05		Tralome-thrin 0.025	
		4 hrs	24 hrs	4 hrs	24 hrs	4 hrs	24 hrs	4 hrs	24 hrs	4 hrs	24 hrs	4 hrs	24 hrs
BRP-00-00620	Ceramic Tile/ Cont.	100	100	27.5	100	97.5	100	97.5	100	25	100	95	100
BRP-00-00622	Particle Board/ Cont.	12.5	100	7.5	100	22.5	100	65	100	65	100	72.5	100
BRP-00-00623	Ceramic Tile/15 sec.	87.5	100	37.5	72.5	52.5	100	55	97.5	0	5.0	22.5	77.5

(3) **Conclusion**: Unacceptable. This study report is lacking many details and it is unclear what the formulation was, what rates were used, if dead insects included moribund counts, and what the results were for insects that were not given a continuous 24-hour exposure time.

MRID 45529901. Performance Data: Efficacy of Tempo Insecticide

(1) Not GLP

This MRID is comprised of some summaries of studies and some detailed information of different studies mostly relating to efficacy against fleas.

Study 1:

Title: Evaluation of the activity of several compounds for outdoor control of the cat flea, *Ctenocephalides felis* (Bouche') using two laboratory bioassays.

(2) Methods: Tempo 0.1% beta-cyfluthrin granular, Tempo Ultra 1 SC (12% beta-cyfluthrin), deltamethrin granules

and ortho diazinon granules were used in this study. The only applicable formulation is the tempo ultra 1 SC formulation so that is the only one that results will be reported for.

Ten replicates of 20 adult cat fleas were placed in a 1-qt glass jar with sand on the bottom. Tempo SC was applied directly to fleas and mortality was assessed at 1, 2, 4, 6, 8 and 24 hours. No control was mentioned. Residual efficacy was tested by spraying sand in 8 oz. plastic cups and exposing adult fleas for 2-3 days then evaluating at 3, 7 & 21 days. Efficacy against larval stages was tested by treating 2" peat pots and 30 cat flea eggs and larval media were placed in peat pots on days 3, 7, 14, 21 & 28. Percent of adult flea emergence was recorded.

(3) Results:
Adult fleas - the low rates used, which were equivalent to the label rates, only resulted in 80% efficacy and the study stated there was some recovery at these rates indicating that morbidity vs. mortality was recorded (they were also named "knockdown mortality" to further indicate this).

Residual flea claims – none of the formulations showed residual control, with the highest being 45% efficacy and that was with forced exposure for 2-3 days.

Larval fleas – Tempo Ultra showed little to no inhibition of adult emergence on days 3 & 7 (they only reported those days so they ran a second test). On the second test run they did have >90% inhibition on days 3, 21 & 28 but not on days 7 or 14.

(4) Conclusion: Unacceptable for all three tests; the rates that match the labeled rate never achieved 90% mortality and it does not appear controls were used in the tests.

Study 2:

2. Koehler, P. G. 1996. A laboratory evaluation of the residual efficacy of FCR 4545 against German cockroaches, cat fleas, and Pharaoh ants. No. 071-95-00203, 9 pp.

(**2) Methods:** A lab evaluation using Tempo SC Ultra (0.025% & 0.05%) and Tempo 20 WP (0.05 % and 0.1%) were applied to a 5.5 cm carpet piece. Three replicates of each were treated and a control was used. Ten adult cat fleas were placed on carpets for 24 hours and mortality was recorded. This was run on weeks 1, 2, 3, 4, 5, 6 & 8. The study gave the rate as being 0.427 lbs ai/gal, which would be equivalent to 0.0033 lbs ai/1,000 ft 2 and twice that of the labeled rate.

(**3) Results:** The results tables provided are unclear, however none of the rates are applicable to this label.

(4) Conclusion: Unacceptable. The tests had forced exposure for 24 hours, it is unclear if mortality included moribund counts, only 4 replicates were used and the rates appeared too high in most/all of the tests (it is unclear based on how the information was presented). In addition, this was a carpet study and only outdoor uses are on this label.

Study 3:

3. Braness, G. A. 1992. Tempo 20 WP perimeter against cat fleas. Internal report, Bayer Corp., No. 077-92-001, 6 pp.

(2) Methods: This was a field study which included 17 single family homes and condos in San Diego. They were each sprayed by a PCO approximately 15 ft around the perimeter. Tempo 20WP was applied at 7 g (formulation) per 1000 ft2. Pre and Post counts were done on days 1, 7, and 28. Pre-counts indicated that zero fleas were found around 8 of the houses, only 4 fleas were around 4, and 1 house was excluded.

(3) Results: Reduction in fleas was 89% on day 1, 49% on day 7, then 90% on day 28.

(4) Conclusion: Unacceptable. Of the houses tested, 8 had no previous infestations and should not have been used as there was nothing to test and the 4 houses with 4 fleas each did not have an adequate infestation to provide reliable or statistically sound results.

Study 4:

4. **Braness, G. A. 1991. Tempo 20 WP against cat flea. Internal report, Bayer Corp., No. 077-91-004, 4 pp.**

(2) Methods: This was a field study conducted in a parking garage, where treatments were done with 0.05% Tempo 20 WP for cat fleas. Approximately 200 sq ft of space was used for only one treatment. Pre-treatment counts (performed by pulling a white towel around the garage floor to see how many fleas attached to it) found 16 fleas in the sampling area. Counts were taken again 2 days later then the property owner was asked how the infestation was a month later.

(3) Results: Two days after treatment 3 fleas were found (81.25% reduction) and the property owner said he saw "none" a month later when asked.

(4) Conclusion: Unacceptable. This study had no control, only 1 sample was used, and asking a property owner for his eye witness account of how many fleas were left make this study unacceptable.

IV. EXECUTIVE DATA SUMMARY:

From the above cited data, the only pests that have data to support it are subterranean termites and *Ixodes scapularis* ticks.

For termites specifically, the conclusion is that when the 2 MRIDS 42443701& 42942301 are used together, they demonstrate that the product is efficacious against termites at the 0.25% rate or a dosing of 0.0026 lbs per sq ft. for the following uses:

- Building foundations: prevents subterranean termite infestations for outdoor homeowner post-construction use only (if termites are found within the house or structure, contact a licensed pest control operator for treatment
- Deck & Fence Posts
- Around/under firewood

For ticks specifically, while the data for the deer tick are acceptable, for any tick claim the lone star tick and either the American or brown dog tick need to be tested as well.

The following pests are not acceptable since there were not sufficient data cited to support them:

- General ant claims or any claims against pharaoh, carpenter, harvester or fire ants specifically. "Ants" can remain if the qualifier is added: "excluding pharaoh, carpenter, harvester and fire ant"
- Ticks
- Fleas
- Spiders (you may retain spiders if you qualify with "excluding brown recluse and black widow")
- Flies /Cluster flies /Gnats
- Wasps, hornets, bees, yellow jackets (you may keep carpenter bees as we do not require data to be submitted for them)
- Wood infesting beetles (Old House Borer Beetle, Asian Longhorned beetle and Emerald Ash borer)
- Mosquitoes
- Centipedes

- Chiggers
- Scorpion
- Above ground termites (Drywood) must also be removed as there were no data submitted to support them.

V. LABEL RECOMMENDATIONS:
Label reviewer: see the above list of pests that need to be deleted or amended with qualifiers.

In addition to those revisions noted above please make the following revisions:

- Under the termite section of the label, under the section for "Firewood" add the statement: "Restriction: Do not treat firewood"
- Add the term "listed" before any general insect claim (such as in "*listed* home invading insects")

The following MRIDs need to be removed as they are considered unacceptable:

40132701
43808901
44208601
45046801
45053101
45060801
45377001
45390601
45529901